



UNITED STATES PATENT AND TRADEMARK OFFICE

Uen
UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/719,192	11/21/2003	Seung-Kwon Baek	5649-1185	2998
7590 Mitchell S. Bigel Myers Bigel Sibley & Sajovec, P.A. P.O. Box 37428 Raleigh, NC 27627	03/22/2007		EXAMINER TU, JULIA P	ART UNIT 2611 PAPER NUMBER
SHORTENED STATUTORY PERIOD OF RESPONSE		MAIL DATE	DELIVERY MODE	
3 MONTHS		03/22/2007	PAPER	

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)
	10/719,192	BAEK ET AL.
	Examiner Julia P. Tu	Art Unit 2611

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on 21 November 2003.
 2a) This action is **FINAL**. 2b) This action is non-final.
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) Claim(s) 1-20 is/are pending in the application.
 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
 5) Claim(s) 1-17 is/are allowed.
 6) Claim(s) 18-20 is/are rejected.
 7) Claim(s) _____ is/are objected to.
 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.
 10) The drawing(s) filed on 21 November 2003 is/are: a) accepted or b) objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)	4) <input type="checkbox"/> Interview Summary (PTO-413)
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)	Paper No(s)/Mail Date. _____
3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____	5) <input type="checkbox"/> Notice of Informal Patent Application
	6) <input type="checkbox"/> Other: _____

DETAILED ACTION

Drawings

1. Figure 1 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 101

2. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claim 20 is rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Claim 20 discloses a Fast Fourier Transform method for processing an Orthogonal Frequency Division Multiplexing (OFDM) signal which does not provide a useful, concrete, and tangible result.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 18-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schmidl et al. (US 5,732,113) in view of Chen et al. (US 2003/0050945).

(1) with regard to claim 18:

As shown in figure 5, Schmidl discloses a Fast Fourier Transform (FFT) processor for processing an Orthogonal Frequency Division Multiplexing (OFDM) signal having a symbol, the symbol including a first long preamble and first data, the FFT processor comprising:

an input buffer that is configured to temporarily store the first data (122 in figure 5); a memory that is configured to store the first long preamble (122 in figure 5, note that the symbol include data and training symbol (i.e. preamble), page 16, lines 3-36); and an FFT unit that is configured to transform the first long preamble in the memory bank into a second long preamble in a frequency domain and to store the second long preamble back into the memory, to transform the first data that is temporarily stored in the input buffer into second data in the frequency domain and to store the second data into the memory (blocks 122 and 126 in figure 5).

Schmidl discloses all of the above subject matters but is silent about a memory bank. However, using memory bank to store a signal data and preamble is well known in the art as it is evidence by Chen et al. (block 70 in figure 5, page 1, paragraph [0007]). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to combine the teaching of Chen into the teaching of Schmidl to reduce hardware cost (column 1, paragraph [0007]).

(2) with regard to claim 19:

Schmidl and Chen further disclose the memory bank (block 122 in figure 5 in Schmidl reference using memory bank 70 in Chen reference) is configured to receive the first preamble (signal first coming into the memory/storage from the input signal) and second long preambles (signal coming out of the DFT/FFT and into the memory/storage) and the first data (signal first coming into the storage buffer from the input signal) and second data (signal coming out of the FFT and into the memory) and to output the first and second long preambles and the first and second data so that the memory bank performs an input function and an output function.

(3) with regard to claim 20:

As shown in figure 5, Schmidl discloses a Fast Fourier Transform (FFT) method for processing an Orthogonal Frequency Division Multiplexing (OFDM) signal having a symbol, the symbol including a first long preamble and first data, the FFT method comprising:

temporarily storing the first data in an input buffer; directly storing the first long preamble in a memory (122 in figure 5, note that the symbol include data and training symbol (i.e. preamble), page 16, lines 3-36); and

transforming the first long preamble (preamble coming in to the DFT/FFT) in the memory into a second long preamble in a frequency domain and storing the second long preamble back into the memory; and transforming the first data that is temporarily stored in the input buffer into second data in the frequency domain and storing the second data into the memory (blocks 122 and 126 in figure 5).

Schmidl discloses all of the above subject matters but is silent about a memory bank. However, using memory bank to store a signal data and preamble is well known in the art as it is evidence by Chen et al. (block 70 in figure 5, page 1, paragraph [0007]). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to combine the teaching of Chen into the teaching of Schmidl to reduce hardware cost (column 1, paragraph [0007]).

Allowable Subject Matter

3. Claims 1-17 are allowed.

The following is a statement of reasons for the indication of allowable subject matter: The present invention comprises a fast Fourier transform processor for demodulating an orthogonal frequency division multiplexing signal having a symbol, the symbol including a first long preamble and first data, the fast Fourier transform

processor comprising: a timing acquisition section that is configured to output a timing signal in response to detect an end point of the first long preamble; a controller that is configured to output a first control signal and a second control signal in response to the timing signal; a signal converter that is configured to store the first long preamble in response to the first control signal, to transform the first long preamble by a fast Fourier transform into a second long preamble, to store the second long preamble, to transform sequentially the first data by the fast Fourier transform into second data as the first data sequentially is received, to output the second long preamble, to store the second data, and to output the second data; and a frequency domain equalizer that is configured to synchronize the second long preamble and the second data that is output from the signal converter in response to the second control signal with a clock frequency of the fast Fourier transform processor, and to output the synchronized second long preamble and second data. The cited prior arts disclose a similar system but fail to teach a timing acquisition section that is configured to output a timing signal in response to detect an end point of the first long preamble and a controller that is configured to output a first control signal and a second control signal in response to the timing signal.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Julia P. Tu whose telephone number is 571-270-1087. The examiner can normally be reached on 7:30 to 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chieh M. Fan can be reached on 571-272-3042. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

J.T.
03/09/2007


CHIEH M. FAN
SUPERVISORY PATENT EXAMINER